Tree Solutions Inc
Consulting Arborists

Project No. TS - 7618

Preliminary Arborist Report

To:	DOWL c/o Darren Murata
Site:	NE 192nd St – NE 195th St, Shoreline WA
Re:	City of Shoreline 1st Ave NE Sidewalk Project
Date:	April 13, 2021
Project Arborist:	Andrea Starbird ISA Certified Arborist #PN-9084A
Reviewed By:	Katherine Taylor ISA Certified Arborist #PN-8022A ISA Qualified Tree Risk Assessor
Referenced Documents:	Tree exhibit (DOWL) Channelization Plan 60% Submittal (DOWL dated 1/26/2021)
Attached:	Table of Trees Annotated Tree exhibit

Summary

Tree Solutions Inc. was asked to conduct an arboricultural assessment of the trees at the above-addressed site in preparation for the City of Shoreline 1st Ave NE Sidewalk Project. No significant trees were present on the site; however, one non-significant tree and three significant trees on adjacent property were inventoried and assessed.

All trees on adjacent properties were inventoried from the subject site or public property such as the adjacent right-of-way (ROW) if they had overhanging canopies or were likely to be impacted by the project; measurements were estimated. I used an alphabetical tree identifier for trees off-site.

According to the Channelization Plan 60% Submittal set (DOWL, 1/26/2021) new sidewalks with underlying storm pipe and drains are proposed. This work will occur within the recommended tree protection zones (TPZ) of Trees B and C, and just outside the TPZ of Tree D.

Based on the proposed plans for the site, all the assessed trees may be retained, and each of the trees will require tree protection measures during construction. An arborist shall be on site to monitor, document and assess any work within tree protection zones as outlined in this report.

No trees are planned for removal. One off-site tree, a Japanese maple below significant size will be transplanted by the property owner.

This report is preliminary and will be finalized once completed construction plans for this project are provided.

Assignment and Scope of Work

This report outlines the site inspection by Andrea Starbird, of Tree Solutions Inc, on March 10, 2021. I was asked to visit the site and assess the significant trees on, and adjacent to, the site. I was asked to produce an arborist report documenting my findings and recommendations. Darren Murata, of DOWL, requested these services for project planning purposes.

Observations & Discussion

Site

The subject site is the public ROW on the east side of 1st Ave NE between NE 193rd St and NE 195th St in Shoreline, WA. There are currently open ditches with culverts in the ROW. Based on the city of Shoreline GIS Interactive Map, no environmentally critical areas exist on or immediately adjacent to the project site.

Trees

This report addresses the trees on the block between NE 193rd St and NE 194th St; I did not observe any significant trees adjacent to the project site on the block between NE 194th St and NE 195th St.

Four trees with canopies overhanging the project site were assessed; three trees were of significant size. One significant tree, Tree C, likely qualifies for landmark status due to its size, however the DSH was estimated from the public ROW.

I have included an exhibit provided by DOWL that shows the tree locations to serve as the site map. The attached table of trees has detailed information about each tree.

Construction Impacts

This report is preliminary as we have not reviewed finalized construction plans for this project.

According to the Channelization Plan 60% Submittal set (DOWL, 1/26/2021) new sidewalks with underlying storm pipe and drains are proposed. According to Darren Murata of DOWL, the new storm pipe will mostly remain within the existing ditches and the sidewalks will be installed above. This work will occur within the tree protection zones (TPZ) of Trees B and C, and just outside the TPZ of Tree D. All work within the tree protection zone must involve arborist coordination.

Tree A is a Japanese maple (*Acer palmatum*) below significant size (Photo 1). Due to infrastructure conflicts, the property owner has decided to transplant the tree. Coordinate with the property owner to ensure that the tree is transplanted prior to site work beginning. I recommend the homeowner provides supplemental irrigation and applies a 4-inch layer of arborist wood chips within the dripline after transplant to help mitigate transplant stress. Tree Solutions can provide additional transplant specifications if needed.

Tree B is a European birch (*Betula pendula*) in good health and structural condition. I observed surface roots in the yard, growing into the ditch, and below the pavement of the driveway to the north (Photo 4). A new storm drain will be installed in the existing ditch, and the existing storm infrastructure and asphalt within the TPZ will be removed and replaced.

European birch trees in our region, particularly those experiencing drought stress, are highly susceptible to bronze birch borer (*Agrilus anxius*) infestation which may kill the tree. I did not observe evidence of advanced bronze birch borer activity in this tree, but I did observe several infected trees in the

neighborhood to the east. It is likely that this birch is taking up water from the existing ditch during storm events and is not experiencing the drought stress common in the region. Because stormwater will be routed away from the root system of this tree, this tree will likely experience increased drought stress. I recommend installing 4-inches of arborist wood chip mulch throughout the dripline (or as far as aesthetics allow) to help maintain soil moisture and temperature. Additionally, supplemental irrigation should be provided during construction to mitigate stress from construction impacts.

Tree C is a Douglas-fir (*Pseudotsuga menziesii*) tree that likely qualifies as a landmark tree; its diameter should be confirmed in coordination with the adjacent property owner. The existing storm drain infrastructure and asphalt within the TPZ of this tree will be removed and replaced (Photo 5). This work has potential to heavily impact the tree and should be performed following the specifications and recommendations provided within this report.

Tree D is a Western redcedar (*Thuja plicata*) on the southeast corner of 1st Ave NE and NE 194th St. Most of the proposed work will occur just outside the recommended TPZ, however fill is proposed just within the TPZ. If excavation remains outside the recommended TPZ and fill is limited, the impacts of work near this tree will be minor.

Tree Protection
Retained off-site trees subject to the tree protection provisions of SMC 20.50 must be protected as outlined in SMC 20.50.370.

To safely preserve the health and structural stability of trees B, C and D, install all tree protection measures as required by Shoreline Municipal Code and the recommended tree protection measures provided in Appendix F prior to any excavation or demolition work. Additionally, follow the construction methods as outlined below:

- An arborist must coordinate all work to occur within the TPZ of off-site trees. Arborist monitoring may be required to document and assess root impacts.
- Install tree protection fencing to prevent access, materials storage, and construction staging on any unpaved surface within the recommended TPZ. The TPZ radius for each tree is provided in the attached table of trees. Fencing shall capture the entire TPZ including areas where construction will occur. The following are exceptions:
    - Fencing does not need to extend into paved areas that are in use.
    - Fencing shall be moved to accommodate required work within the TPZ while an arborist is on site.
    - Fencing shall block construction activities from entering unimpacted areas in the TPZ on private property while allowing residents to continue to use their yards within the TPZ.
- Install wood chip mulch within the TPZ to prevent compaction and help retain moisture.
    - Install 6 inches of arborist wood chip mulch throughout the tree protection areas and within the dripline of impacted off-site trees (as allowed by adjacent property owners).
    - Where construction access is required in the TPZ, install 12 inches of arborist wood chip mulch on top of bare soils or lawn surface.
    - At no time shall machinery or materials staging take place on unprotected soil surfaces.

- Provide supplemental drip irrigation to all impacted trees during the drought season (April through September) to mitigate stress from construction impacts.
- Removal of hardscape within the TPZ of Trees B and C should be done by hand or carefully removed using a flat-fronted excavator staged outside of the tree protection area or on existing pavement. Where root conflicts are evident, remove hardscape by hand. An arborist must be on site for this work.
- Any required excavation within the TPZ of off-site trees, should be done with pneumatic air excavation to prevent stripping bark on roots. Once roots are exposed, route pipes below the roots as is feasible. An arborist must be on site for this work.
- Avoid excavating below the existing grade of the ditches. If excavation is required within the existing open ditches, use pneumatic air excavation to expose large structural roots. Install coarse gravel without fines around the roots to create an air barrier when backfilling the excavated areas.
- Limit any fill within the TPZ to large aggregate without fines where structural subbase is needed, and loose well-draining uncompacted topsoil in landscape areas to meet the final sidewalk grade.
- Retain all structural roots within the subbase to the extent possible. If structural roots 2 inches or greater interfere with the new sidewalk surface, coordinate with project arborist to determine methods for retention. Possible methods include lifting the grade of the sidewalk, shaving and applying subbase over top of the roots, or shaving and applying steel plates or foam overtop within the subbase.

I have indicated areas where arborist monitoring and alternative excavation measures will be necessary on the attached annotated exhibit.

Recommendations

- Locate Tree C on the site survey and add accurate tree data to all plan pages that show work near trees. Show the tree identifier, dripline and recommended TPZ.
- Provide Tree Solutions a complete set of construction plans for finalized assessment of construction impacts.
- Call out areas where arborist monitoring and alternative excavation methods are required (identified on attached annotated exhibit) on the plan set and when soliciting bids. Include the recommended tree protection specifications in Appendix F.
- Follow tree protection standards as stated in SMC 20.50.370.
- Follow recommended construction measures provided within this report and as outlined on the attached annotated exhibits.
- All pruning should be conducted by an ISA certified arborist and following current ANSI A300 specifications (ASC 300 2017, Part 1).

Respectfully submitted,

Andrea Starbird,
Consulting Arborist

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Appendix A **Glossary**

DBH or DSH: The diameter of any tree trunk, measured at four and one-half feet above average grade. For species of trees whose normal growth habit is characterized by multiple stems (e.g., hazelnut, vine maple) diameter shall mean the average diameter of all stems of the tree, measured at a point six inches from the point where the stems digress from the main trunk. In no case shall a branch more than six inches above average grade be considered a stem. For the purposes of Code enforcement, if a tree has been removed and only the stump remains, the size of the tree shall be diameter of the top of the stump (Shoreline Municipal Code 20.20.016)

dripline: An area encircling the base of a tree, the minimum extent of which is delineated by a vertical line extending from the outer limit of a tree's branch tips down to the ground (Shoreline Municipal Code 20.20.016)

ISA: International Society of Arboriculture

tree: A self-supporting woody plant characterized by one main trunk or, for certain species, multiple trunks, with a potential at maturity for a trunk diameter of two inches and potential minimum height of 10 feet (Shoreline Municipal Code 20.20.048).

tree, canopy: The total area of the tree or trees where the leaves and outermost branches extend, also known as the "dripline" (Shoreline Municipal Code 20.20.048).

tree, coniferous: Any of various mostly needle-leaved or scale-leaved, chiefly evergreen, cone-bearing gymnospermous trees, such as pines, spruces, and firs (Shoreline Municipal Code 20.20.048).

tree, deciduous: Trees that shed or otherwise lose their foliage at the end of the growing season, such as maples, alders, oaks, and willows (Shoreline Municipal Code 20.20.048).

tree, evergreen: Trees that maintain the majority of their foliage each year when grown in the Shoreline area. Examples of evergreen trees include pines, firs, Douglas fir, and the Pacific Madrone (Shoreline Municipal Code 20.20.048).

tree, landmark: Any healthy tree over 30 inches in diameter at breast height or any tree that is particularly impressive or unusual due to its size, shape, age, historical significant or any other trait that epitomizes the character of the species, or that is an regional erratic (Shoreline Municipal Code 20.20.048).

tree, significant: Any tree eight inches or greater in diameter at breast height if it is a conifer and 12 inches or greater in diameter at breast height if it is a non-conifer excluding those trees that qualify for complete exemptions from Chapter 20.50 SMC, Subchapter 5, Tree Conservation, Land Clearing, and Site Grading Standards, under SMC 20.50.310(A). (Ord. 669 § 1 (Exh. A), 2013). (Shoreline Municipal Code 20.20.048)

tree, stand or cluster: A group of three or more trees of any size or species, whose driplines touch (Shoreline Municipal Code 20.20.048)

Visual Tree Assessment (VTA): method of evaluating structural defects and stability in trees by noting the pattern of growth (Mattheck & Breloer 1994)

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Appendix B **References**

Accredited Standards Committee A300 (ASC 300). ANSI A300 (Part 1) Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Londonderry: Tree Care Industry Association, 2017.

Fite, Dr. Kelby and Dr. E. Thomas Smiley. Best Management Practices: Managing Trees During Construction, Second Edition. Champaign, IL: International Society of Arboriculture (ISA), 2016.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Shoreline Municipal Code (SMC)

20.50.350 Development standards for clearing activities.

20.50.370 Tree protection standards.

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Appendix C **Photographs**

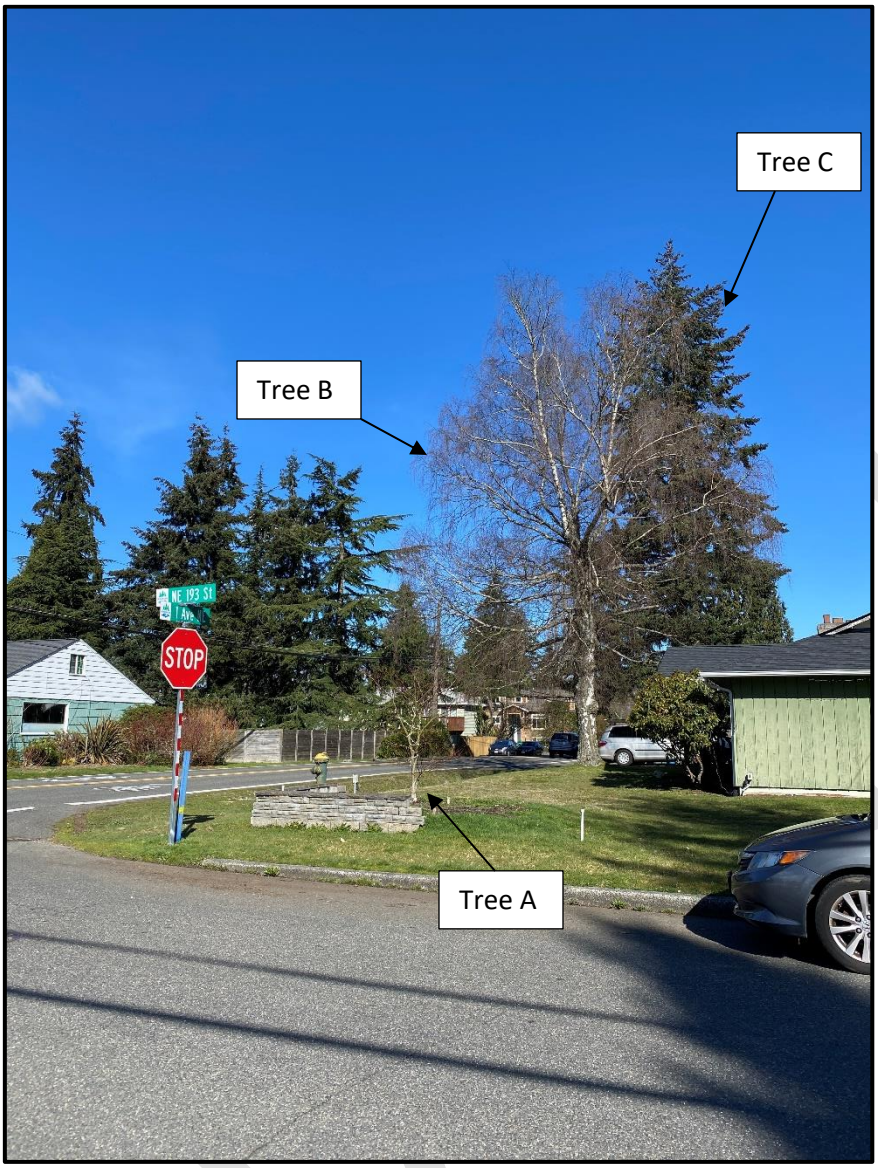

Photo 1. Off-site trees likely to be impacted by the sidewalk project looking northwest.

Photo 2. Tree A, a Japanese maple below significant size. Planned for transplant prior to work.

Photo 3. Tree B, a significant European birch. Note proximity to existing ditch (blue) and root conflicts (yellow).

Photo 4. Large diameter surface root from Tree B, a European birch. Efforts should be made to preserve and work around large diameter roots. Note the conflicts with existing driveway identified with yellow arrows.

Photo 5. Tree C, a Douglas-fir tree that may qualify as a Landmark tree. Existing ditch and asphalt fall within the dripline and recommended tree protection zone.

Appendix D **Assumptions & Limiting Conditions**

1 Consultant assumes that the site and its use do not violate, and is in compliance with, all applicable codes, ordinances, statutes or regulations.

2 The consultant may provide a report or recommendation based on published municipal regulations. The consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.

3 Any report by the consultant and any values expressed therein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.

4 All photographs included in this report were taken by Tree Solutions, Inc. during the documented site visit, unless otherwise noted. Sketches, drawings and photographs (included in, and attached to, this report) are intended as visual aids and are not necessarily to scale. They should not be construed as engineering drawings, architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by the consultant as to the sufficiency or accuracy of the information.

5 Unless otherwise agreed, (1) information contained in any report by consultant covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring.

6 These findings are based on the observations and opinions of the authoring arborist, and do not provide guarantees regarding the future performance, health, vigor, structural stability or safety of the plants described and assessed.

7 Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.

8 Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

9 Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

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Appendix E **Methods**

Measuring

I measured the diameter of each tree at 54 inches above grade, diameter at standard height (DSH). If a tree had multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by averaging the diameters of each stem. A tree is regulated based on this single-stem equivalent diameter value. Because this value is calculated in the office following field work, some non-significant trees may be included in our data set. These trees are included in the tree table for informational purposes only and not factored into tree totals discussed in this report.

Tagging

I tagged each tree with a circular aluminum tag at eye level. I assigned each tree a numerical identifier on our map and in our tree table, corresponding to this tree tag. I used alphabetical identifiers for trees off-site.

Evaluating

I evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts. An understanding of the uniform stress allows the arborist to make informed judgments about the condition of a tree.

Rating

When rating tree health, I took into consideration crown indicators such as foliar density, size, color, stem and shoot extensions. When rating tree structure, I evaluated the tree for form and structural defects, including past damage and decay. Tree Solutions has adapted our ratings based on the Purdue University Extension formula values for health condition (*Purdue University Extension bulletin FNR-473-W - Tree Appraisal*). These values are a general representation used to assist arborists in assigning ratings.

Excellent - Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good - Imperfect canopy density in few parts of the tree, up to 10% of the canopy. Normal to less than ¾ typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist, they are controllable, or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair - Crown decline and dieback up to 30% of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and “off” coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop clearly visible. Obvious signs of pest problems contributing to lesser condition, control might be possible. Some decay areas found in main stem and branches. Below average safe useful life expectancy

Poor - Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

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Appendix F **Recommended Tree Protection Specifications**

The following is a list of protection measures that must be employed before, during and after construction to ensure the long-term viability of retained trees.

1. **Project Arborist:** The project arborists shall at minimum have an International Society of Arboriculture (ISA) Certification and experience managing trees during construction.
2. **Tree Protection Zone (TPZ):** Per SMC 20.50.370, trees shall be protected at the tree dripline or critical root zones as defined by the International Society of Arboriculture. For this project, the recommended TPZ is 8x the trunk diameter at standard height. In some cases, the TPZ may extend outside tree protection fencing. Work within the TPZ must be approved and monitored by the project arborist.
3. **Tree Protection Fencing:** Tree protection shall consist of 6-foot chain-link fencing installed at the TPZ as approved by the project arborist or required by the City. Fence posts shall be anchored into the ground or bolted to existing hardscape surfaces.
    a. Where trees are being retained as a group the fencing shall encompass the entire area including all landscape beds or lawn areas associated with the grove.
    b. Per arborist approval, TPZ fencing may be placed at the edge of existing hardscape within the TPZ to allow for staging and traffic.
    c. Where work is planned within the TPZ, install fencing at edge of TPZ and move to limits of disturbance at the time that the work within the TPZ is planned to occur. This ensures that work within the TPZ is completed to specification.
    d. Where trees are protected at the edge of the project boundary, construction limits fencing shall be incorporated as the boundary of tree protection fencing.
4. **Tree Protection Signage:** Tree protection signage shall be affixed to fencing every 20 feet. Signage shall be fluorescent, at least 2’ x 2’ in size. Signage will note: “Tree Protection Area – Do Not Enter: Entry into the tree protection area is prohibited unless authorized by the project manager.” Signage shall include the contact information for the project manager and instructions for gaining access to the area.
5. **Filter / Silt Fencing:** Filter / silt fencing within the TPZ of retained trees shall be installed in a manner that does not sever roots. Install so that filter / silt fencing sits on the ground and is weighed in place by sandbags or gravel. Do not trench to insert filter / silt fencing into the ground.
6. **Monitoring:** The project arborist shall monitor all ground disturbance at the edge of or within the TPZ, including where the TPZ extends beyond the tree protection fencing.
7. **Soil Protection:** No parking, foot traffic, materials storage, or dumping (including excavated soils) are allowed within the TPZ. Heavy machinery shall remain outside of the TPZ. Access to the tree protection area will be granted under the supervision of the project arborist. If project arborist allows, heavy machinery can enter the area if soils are protected from the load. Acceptable methods of soil protection include applying 3/4-inch plywood over 4 to 6 inches of wood chip mulch or use of AlturnaMats® (or equivalent product approved by the project arborist). Retain existing paved surfaces within or at the edge of the TPZ for as long as possible.
8. **Soil Remediation:** Soil compacted within the TPZ of retained trees shall be remediated using pneumatic air excavation according to a specification produced by the project arborist.
9. **Canopy Protection**: Where fencing is installed at the limits of disturbance within the TPZ, canopy management (pruning or tying back) shall be conducted to ensure that vehicular traffic does not damage canopy parts. Exhaust from machinery shall be located five feet outside the dripline of retained trees. No exhaust shall come in contact with foliage for prolonged periods of time.

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10. **Duff/Mulch:** Apply 6 inches of arborist wood chip mulch or hog fuel over bare soil within the TPZ to prevent compaction and evaporation. TPZ shall be free of invasive weeds to facilitate mulch application. Keep mulch 1 foot away from the base of trees and 6 inches from retained understory vegetation. Retain and protect as much of the existing duff and understory vegetation as possible.
11. **Excavation:** Excavation done at the edge of or within the TPZ shall use alternative methods such as pneumatic air excavation or hand digging. If heavy machinery is used, use flat front buckets with the project arborist spotting for roots. When roots are encountered, stop excavation and cleanly sever roots. The project arborist shall monitor all excavation done within the TPZ.
12. **Fill:** Limit fill to 1 foot of uncompacted well-draining soil, within the TPZ of retained trees. In areas where additional fill is required, consult with the project arborist. Fill must be kept at least 1 foot from the trunks of trees.
13. **Root Pruning:** Limit root pruning to the extent possible. All roots shall be pruned with a sharp saw making clean cuts. Do not fracture or break roots with excavation equipment.
14. **Root Moisture:** Root cuts and exposed roots shall be immediately covered with soil, mulch, or clear polyethylene sheeting and kept moist. Water to maintain moist condition until the area is back filled. Do not allow exposed roots to dry out before replacing permanent back fill.
15. **Hardscape Removal:** Retain hardscape surfaces for as long as practical. Remove hardscape in a manner that does not require machinery to traverse newly exposed soil within the TPZ. Where equipment must traverse the newly exposed soil, apply soil protection as described in section 8. Replace fencing at edge of TPZ if soil exposed by hardscape removal will remain for any period of time.
16. **Irrigation:** Retained trees with soil disturbance within the TPZ will require supplemental water from June through September. Acceptable methods of irrigation include drip, sprinkler, or watering truck. Trees shall be watered three times per month during this time.
17. **Pruning:** Pruning required for construction and safety clearance shall be done with a pruning specification provided by the project arborist in accordance with American National Standards Institute ANSI-A300 2017 Standard Practices for Pruning. Pruning shall be conducted or monitored by an arborist with an ISA Certification.
18. **Plan Updates:** All plan updates or field modification that result in impacts within the TPZ or change the retained status of trees shall be reviewed by the senior project manager and project arborist prior to conducting the work.
19. **Materials:** Contractor shall have the following materials onsite and available for use during work in the TPZ:
    - **Sharp and clean bypass hand pruners**
    - **Sharp and clean bypass loppers**
    - **Sharp hand-held root saw**
    - **Reciprocating saw with new blades**
    - **Shovels**
    - **Trowels**
    - **Clear polyethylene sheeting**
    - **Burlap**
    - **Water**

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Tree Solutions Inc
Consulting Arborists

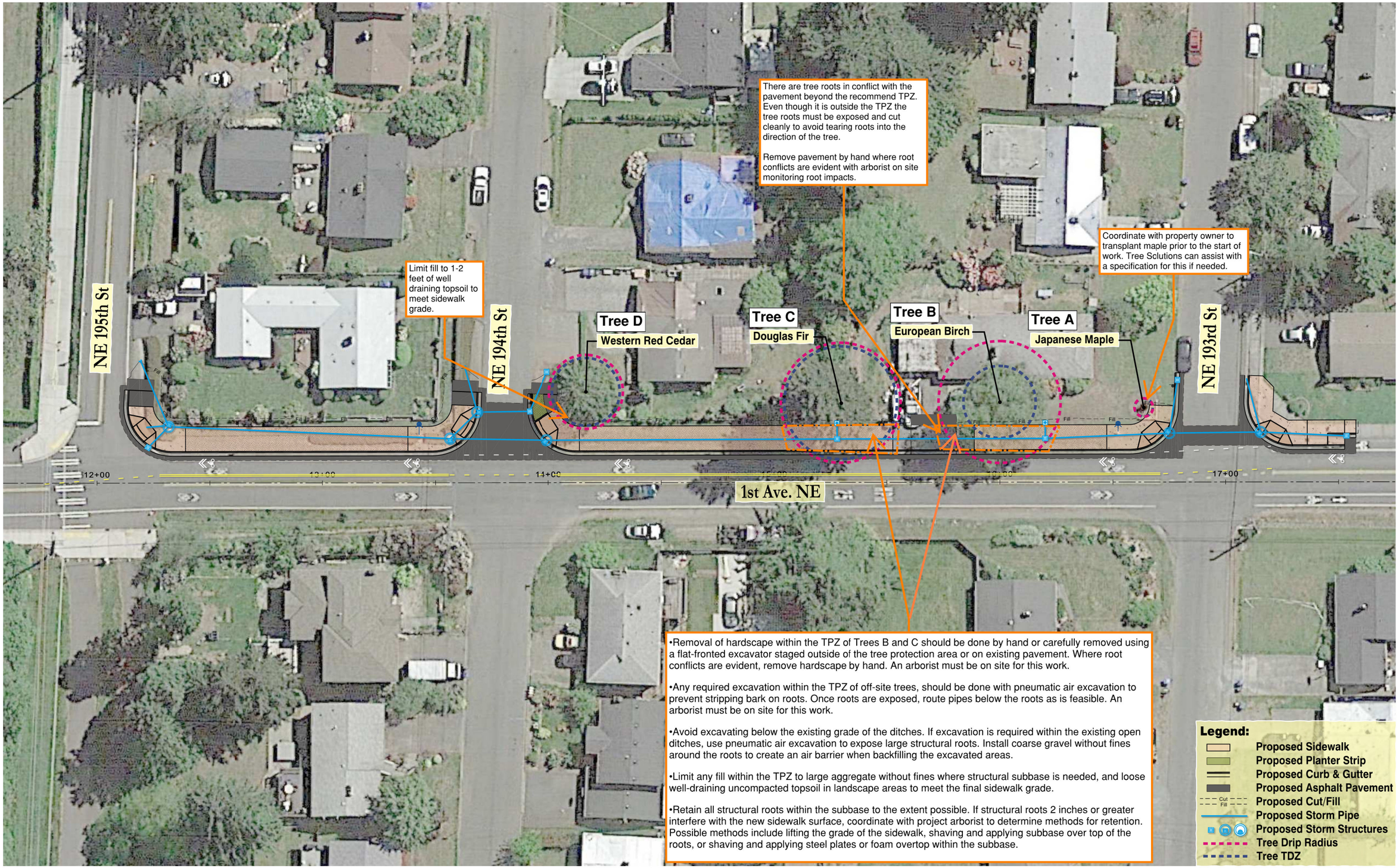
Table of Trees

1st Avenue NE NE 193rd St
Shoreline, WA

Arborist: AS
Date of Inventory: March 10, 2021

DSH (Diameter at Standard Height) is measured 4.5 feet above grade.
DSH for multi-stem trees are noted as a single stem equivalent, which is calculated by averaging all stem measurements.
Letters are used to identify trees on neighboring property with overhanging canopies.
Dripline is measured from the center of the tree to the outermost extent of the canopy.
Recommended TPZ (Tree Protection Zone) (8 x DSH) was determined as outlined in the ISA Best Management Practices: Managing Trees During Construction

Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**DSH Multistem**	**Health Condition**	**Structural Condition**	**Dripline Radius** (feet)	**Proposed Action**	**Recommended TPZ** (feet)	**Notes**
A	*Acer palmatum*	Japanese maple	1.5		Good	Good	4.1	Transplant	4	DSH estimated. 13.5 feet from existing curb; girldling root on east side; 18" deep walled tree well, but grade is only 1' higher than lawn. 16.5' from hydrant. Suitable for transplant. If transplanted TS can provide a specification.
B	*Betula pendula*	European white birch	24.0		Good	Fair	27.0	Retain	16	DSH estimated. 1" diameter surface root at 33' southwest with mower damage and response growth, roots observed on edge of exisiting ditch. Substansial surface roots north of the the tree, roots likely lifting drive. Appoximately 5 visible strucraul roots headed into the ditch area, 1-2" diameter. Some sapsucker activity. Symptoms of Bronze Birch Borer observed in neighborhood birch trees.
C	*Pseudotsuga menziesii*	Douglas-fir	38.0		Good	Good	26.6	Retain	25	DSH estimated. Growing between fence and shed on adjacent property. No surface roots observed in ditch area, however roots appear to be below driveway. 14 feet to center of ditch, 10 feet to driveway edge.
D	*Thuja plicata*	Western redcedar	22.5	26,19	Good	Good	16.4	Retain	15	DSH estimated. Codominant at 2 feet. Center of ditch is 13.5 feet on N side, 19 feet on W side. Soil appears to be very compacted, no surfact roots observed.



Aerial exhibit base provided by DOWL. Annotated by A. Starbird of Tree Solutions Inc. April 13th, 2021

Tree Solutions Inc.
Shoreline Sidewalk Project - DOWL

A. Starbird

April 13, 2021

Source: Google street view, accessed April 12, 2021. Street view dated May 2019.